Acute Appendicitis: A Review of Cases

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The most serious feature of this disease is that the mortality is not diminishing to an extent commensurate with our experience of it. The Registrar-General's returns for Northern Ireland show an average of ninety-five deaths yearly from this cause during the ten-year period, 1920-9. In 1930 it caused eighty-six deaths in the Six Counties, and this despite a declining population. These figures do not include deaths ascribed to peritonitis and intestinal obstruction, some of which were undoubtedly appendicular in origin.

A few months ago, in an address which received much publicity, both in the medical and lay press, Sir James Berry suggested that surgical interference was responsible for much of the mortality. Naturally there was a good deal of opposition to this view on the part of surgeons, but it also received some support.

There are, however, no reliable statistics as to what the mortality was in pre-surgical days, since biopsy alone can establish the diagnosis with certainty, and it seems probable that the disease has become more common. Naturally, since surgical intervention became the recognised method of dealing with the lesion, it is hard to find details of a series of unselected cases deliberately treated on conservative lines. A group of sixty-eight cases were so treated at St. Thomas's Hospital a few years ago; of these seventeen, i.e., twenty-five per cent., went wrong inasmuch as they developed abscesses or other complications, and 4.4 per cent. died. On the other hand, with early cases and with cases where gross peritoneal infection has not occurred, the death-rate is well under one per cent., and such are seldom more than a fortnight in hospital or nursing-home, and often much less. These facts are not in dispute, and it was chiefly with the object of discovering the factors that account for the difference between cases that are well in two to three weeks after an easy convalescence, and those that die or suffer prolonged illness, that I have collected the records of 390 consecutive personal cases.

Most of these operations were performed in the Royal Victoria Hospital, and I have to thank the senior members of the staff, particularly Mr. Mitchell and Mr. Stevenson, for my opportunities. I have only included acute cases operated upon within twenty-four hours of admission. The view expressed when the Association of Surgeons met here eighteen months ago was, that every case of appendicitis should be operated upon immediately it was diagnosed, unless a mass were present. I think perhaps this was too sweeping a statement, although I practised it until two to three years ago, but have modified it since.

In my series of cases twenty-five died, but in justice to myself I must say that I have included all deaths that could be attributed to the condition, however indirectly; it includes some hopelessly ill on admission with advanced peritonitis or abscess, who were given the remote chance of drainage. I feel that unless I present all the facts without reference to my desire to have a low death-rate, that

this paper would be valueless. My chief object is to establish why these deaths occurred, and to suggest if possible how they might have been prevented.

The first problem was to group the cases. It was obvious that the most important distinction was into those where gross peritoneal infection was absent, and those where it was present, for I think it will be agreed that infection is the chief cause of death and prolonged disability. These two classes I have further subdivided into groups according to the visible pathology, not only of the appendix as a whole, but after slitting it open and examining the mucous membrane, as it is only by so doing that in many cases the real nature of the lesion becomes apparent. For some time past I have been indebted to Professor Young for the histological examination of the specimens and his keen interest in the subject.

The first group with which I have to deal comprises those cases where no gross visible pathology was present in the appendix, though clinically they were regarded as acute cases, or at least so suspicious as to justify exploration. There were fourteen such. I do not include cases that had other definite lesions simulating acute appendicitis and demanding surgical interference in any case. This negative group is important, as naturally the criticism of unnecessary surgery is directed towards such cases, or rather towards the perpetrator. They can be described under three heads:—First, ileo-cæcal adenitis exacerbations, of which do at times make differential diagnosis impossible with certainty. Seven were of this nature, and in five there was no feature to distinguish the attack from appendicitis. In the remaining two glands were strongly suspected. I do not regard exploration of the ileo-cæcal angle in these cases as bad surgery. The attacks are probably due to a fresh flood of infection from the drainage area, of which the appendix is an important part, and so its removal is quite logical—although interference with the glands is not (none in this series was calcified). In addition, enlarged glands are not infrequent when the appendix is obviously diseased, so it is only by biopsy that its condition can be ascertained. In thirty-four out of 221 cases in which the mesentery was examined and a record kept, glands were present to a pathological extent, that is, 15.8 per cent.

The remaining seven cases were either errors in diagnosis, or else due to appendicular colic, the source of irritation having been discharged prior to operation. In all these cases, as in all where gross peritoneal infection was absent, the terminal ileum, and in females the uterus and adnexa, were examined. The ureter was also examined in these particular patients. In such cases one is always uneasy lest some other cause for the attack may have been overlooked, and I can only stress the necessity for careful routine examination in all cases, since appendicectomy will not necessarily relieve ureteral colic or other unrelated conditions.

All these recovered rapidly, and in none did subsequent examination of the ureter, etc., reveal another cause for the attack. The only one histologically examined showed marked sub-mucous fibrosis, and I conclude that a temporary colic explained the majority. More than half had had previous attacks, and sooner or later were certain to be operated on. None were more than fifteen days in hospital.

The next group is a small one of five who had foreign bodies in the appendix—there was one case each of whipworm, threadworm, tapeworm, wood, and metal

splinters. My only comment is on the comparative rarity in this country of parasites in the appendix; they seem much commoner abroad. None had had previous attacks; all left hospital inside a fortnight, except one who developed paratyphoid.

Before discussing the next group of obstructed and inflammatory types, I must remind you that this important distinction was first made over twenty years ago by that very keen observer and sound surgeon, the late Mr. Robert Campbell; the importance of this pioneer work is only receiving of late years due recognition outside this school. I must also add that another distinguished surgeon of our school, Mr. S. T. Irwin, about fifteen years ago employed a classification very similar to the one I am adopting—I can only say that I can find no better method used since then.

The obstructed group I regard as by far the most important, as it is the commonest and most dangerous variety. I include in this only cases where mechanical interference with emptying was present and obvious. The vast majority showed very striking changes in the mucous membrane, varying from congestion or injection to œdema and acute inflammation, or ulceration beyond the point of obstruction, in contrast with the normal mucous membrane proximal to it.

Obstructions of a hollow tube may be most simply divided into three classes:—Cases where the lumen is occluded—in this case by fæcal masses; cases where the lumen is narrowed by changes in the wall, here strictures; and cases where conditions outside the wall obstruct—kinks, twist, and bands. Very frequently a combination of two or more of these causes was present. When the anatomy of the appendix is considered—a long, narrow tube blind at one end, with a mesentery of varying length and a rich deposit of lymphoid tissue in its wall liable to inflammation in its earlier years, and likely to be replaced by fibrous tissue in consequence, it is not surprising that mechanical effects are readily produced. Histologically these organs almost always show excessive sub-mucous fibrosis, apart from the congestive or inflammatory changes distal to the obstruction. When there has been a history of repeated attacks, the source of this is obvious; but I believe that many of the forgotten minor gastric attacks of childhood are probably associated with inflammation of the lymphoid tissue of the appendix. Such organs enter adult life handicapped by diminished elasticity. If to this be added chronic constipation, and appendicular stasis, in common with the rest of the lower alimentary tract, and the accumulation of solid fæces in the lumen with stercoral ulceration resulting, it is easy to account for strictures, often visible to the naked eye as annular bands of fibrous tissue.

Add to this constriction by bands, sometimes congenital, sometimes acquired from previous attacks, or kinks produced by similar conditions in the mesentery, often in themselves sufficient to occlude the lumen, and it takes little imagination to appreciate the sequence of events which leads to an acute attack of what we call appendicitis.

The further progress differs in no way from obstruction in any other tubular organ, except that in a closed tube the process is more rapid. The sequence is engorgement of veins, back pressure in capillaries, increased exudate and increase of contents distal to the obstruction, with the added burden of infection which soon

occurs in this area of stasis teeming with potentially pathogenic micro-organisms. Soon or late, according to the completeness of obstruction, if relief does not take place, arterial blockage and gangrene must ensue, first in the mucosa which bears the brunt of the pressure, then in the succeeding coats.

This at least is the common picture; in other cases the whole organ beyond the obstruction rapidly becomes gangrenous, especially when the constricting force has involved the mesentery. Until gangrene actually ensues, gross peritoneal infection is very rare. In many of these cases there is marked local peritoneal reaction, due no doubt to seepage of infective material through the wall, but it is a relatively slow process. Walling-off has time to occur, and protective mechanisms, particularly the omentum, have a favourable opportunity.

There were 126 simple obstructed appendices in the series, that is to say, neither gangrene nor perforation had occurred prior to operation. Fifty-seven—that is, almost half—had had one or more previous attacks; sixty-six were operated upon within twenty-four hours, and ninety-one within forty-eight hours of the onset of symptoms. One death occurred in a youth of 19, the subject of active pulmonary tuberculosis and a bad heart. He was less than twenty-four hours ill at the time of operation, but an obstructed appendix was on the point of perforation. He died four days later from cardiac failure. Of the remaining cases, 105—i.e., eighty-four per cent.—were discharged within fourteen days. Only four were over three weeks in hospital—one because of broncho-pneumonia, and three because of wound sepsis.

The mortality in this group is .8 per cent., and although many were bad cases, this death-rate is higher than it should be. Barring the misfortune of having to deal with such a very bad operative risk as the fatal case was, a long series could probably be presented without any mortality or serious complications.

Without operation, no doubt a large proportion would have recovered, inasmuch as they would not have died, but my figures show that of all obstructed cases at least fifty per cent. go on to gangrene, perforation, abscess, or peritonitis, so sixty-three would presumably have reached these danger zones. In the remainder obstruction is overcome, and a damaged appendix liable to recurrent attacks, or to act as a reflex cause of abdominal symptoms, is left as the legacy. In a few, no doubt, the lumen becomes obliterated and harmless atrophy ensues.

The next group consists of inflammatory lesions. I have included all cases where there was general inflammation of the organ without demonstrable obstruction. In the majority I was quite unable to make out any clear distinction between the symptomatology in this and the obstructed group, such as Mr. Robert Campbell described. Possibly the fact that children under twelve constituted a considerable proportion of his cases may have accounted for this. The presence in children of a large amount of lymphoid tissue in the organ, liable to catarrhal and other infections in common with that of the pharynx, would make this type more likely to occur in them. The fairly frequent history of an antecedent cold or sore throat in such cases supports this view. Actually, however, from the history of these cases I suspect that obstruction was really the preceding cause of the pathology in many. It must be remembered that in removing the organ, part of the base is necessarily left, and

in particular the junction area with the cæcum, where a valve and probably a sphincter exist. This is a likely point of lodgment of fæcal masses and obstruction. Unless one excises this area proof is wanting.

There were fifty-six such cases, thirty less than twenty-four hours ill and forty under forty-eight hours; twenty-five had had previous attacks; one died, a man of 45, on the fourth day, from pulmonary embolism, as established by post-mortem examination. As all operations carry this risk, it has no particular bearing on this subject; forty-four—i.e., eighty per cent.—left hospital within fourteen days, and only three were more than three weeks in hospital on account of delayed healing of wounds.

Without operation the true inflammatory case will generally subside, unless complicated by obstruction. I have come to the conclusion that this type of case is comparatively rare, much rarer that my figures indicate, for the reasons I have given, and that diagnosis cannot be based on history and physical signs with certainty. Not long since I diagnosed with considerable confidence a case as inflammatory, only to find at operation a perfectly typical obstructed appendix on the point of bursting.

A series of twenty-seven I have called indeterminate, where congestion, extensive ecchymosis, or thickening, were present. These probably represented cases in the process of resolution, or chronic cases which had become sub-acute. All were discharged within three weeks; sixteen had had previous attacks. This completes a total of 228 cases in which the peritoneum escaped serious invasion, although many were severely ill and had considerable local peritoneal reaction.

The death-rate was .8 per cent.; eighty-two per cent. were less than fourteen days and ninety-seven per cent. less than three weeks in hospital; fifty-one per cent. were operated upon within twenty-four hours, and seventy per cent. within forty-eight hours.

In the next group I have included all that had gangrene of the appendix without actual perforation. As I have already indicated, the vast majority of these are obstructive in origin; they varied from localised gangrene of the mucous membrane to gangrene of the whole organ. In nearly all could be demonstrated gangrene distal to an obstruction, and, according to the stage, confined to the mucosa, or involving succeeding external coats. The line of demarcation was usually very striking.

It might be asked, Could involvement of mesenteric vessels produce this condition? Anastomosis is relatively good in the appendix, and emboli and thrombosis rare in the age period commonly affected—only very marked twists of the mesentery would produce it, and only rarely does one find this, except with concomitant kinking of the organ itself. Thrombosis certainly frequently occurs as a result of progressive inflammatory changes, but it is a secondary result and not causative.

In a few cases localised patches due to pressure of irregular fæcoliths were present. These often perforate rapidly.

If gangrene has been sudden in onset, there is often a considerable degree of peritonitis with little walling-off, but on the whole, severe peritoneal infection is delayed until actual perforation supervenes.

In thirty-nine—i.e., more than half—of these cases gangrene had occurred within twenty-four hours of onset, emphasising the rapidity with which obstruction can lead to serious consequences and the danger of delay. Fifty-eight of the sixty-four were less than forty-eight hours ill, eighteen had had previous attacks; forty—i.e., sixty-two per cent.—were discharged within fourteen days; and fifty-eight within three weeks. There were two deaths—a mortality of 3.1 per cent. Gangrene alone, although giving a much higher death-rate, is the intermediate stage between the clean and the seriously soiled peritoneum. It is only when it has persisted too long that gross peritoneal invasion occurs. A man of 33 and a woman of 37, ill respectively three and four days, died. Both had a considerable degree of peritonitis. The first had a retro-cæcal obstructed gangrenous appendix, the second in addition a very inflamed and friable cæcum. One died in four, and the other in eight days, from peritonitis and toxæmia.

Probably these represented a type of case that should be left alone in the hope that they may localise more completely, since operation may disseminate infection, and encroach on the resistance of a patient already severely tried.

Conservative treatment has its place here, but it must be emphasised that delay has allowed such cases to become very seriously ill, and the surgeon is confronted with a most difficult problem, since by this time the patient, his friends, and his doctor are greatly alarmed and often press for operation. Whether he operates or not, he knows that the outcome may be fatal, and that in either case he will bear the responsibility. I know of no guide as to procedure except experience in this type of case.

Perforated appendices constitute the next group. Most of these were definitely the end results of obstruction, followed by gangrene, and often there was complete disintegration of the part distal to the obstruction. In some there was a localised perforation at the site of an annular ulcer, presumably due to fæcal impaction, and in a few there was a perforation with little surrounding change. Whether these latter were due to rupture of an ulcer, an intramural abscess, or to a penetrating foreign body, I cannot say. Naturally, in all peritoneal infection was present, sometimes localised by surrounding omentum, but often without adequate walling-off.

Sixty-five cases, sixteen per cent. of the total 390, were of this variety; that is to say, a serious abdominal catastrophe had taken place. Fourteen were operated upon within twenty-four hours of onset, again a warning of how rapidly a simple condition can become a very grave one; and twenty-three were operated upon on the second day of illness, so that more than half perforated within forty-eight hours; fifteen had had previous attacks. The death-rate was 9.2 per cent., and only twenty-one—that is, thirty-two per cent.—were discharged within fourteen days; twenty-two—i.e., 33.6 per cent.—were more than three weeks in hospital; six died, one a third-day case, three four-day cases, the others seven and fourteen days ill respectively. Their ages ranged from 7 to 35; only one had had previous attacks.

All but one of these fatal cases were obviously seriously ill at the time of operation, and had evidence of peritonitis. The exception had been severely burnt a week before, and died twenty-five days after operation from pneumonia and empyema, and post-mortem examination showed residual pus in the right iliac fossa and sub-

phrenic regions; one died of toxæmia and peritonitis six days after operation; one twenty-one days afterwards from paralytic ileus, despite jejunostomy; one, a woman five and a half months pregnant at the time of operation, died at the end of two months from exhaustion, having developed a fæcal fistula; one made a good recovery, then developed paratyphoid, and two months later was readmitted with intestinal obstruction, and died after jejunostomy had been performed by another surgeon. The last one also appeared to make a good recovery, but was readmitted, and died forty-three days later from pylephlebitis and liver abscess.

Again it must be considered if operation was a contributory cause of death, but as most of them died of late complications attributable to sepsis already present, I do not think so.

More than half were over fourteen days in hospital, and one-third more than three weeks on account of wound infections.

Some, no doubt, will have ventrial hernias, and some, persistent abdominal discomfort as reminders. In only one of the survivors did a fæcal fistula persist for some months, and that a very slight one. A few had temporary fæcal discharges. Possibly the use of corrugated rubber drains instead of tubes has some relation to the infrequency of this complication, which seems much less common than it used to be.

It is tragic to consider that six young lives were sacrificed—in every case because of delayed operation. For the remainder, long periods of convalescence ensued instead of the usual ten to fourteen days.

I do not deny that even of these cases a number recover without operation, and that they may recover with very little trace of adhesions, but they do run very grave risks both of immediate and late results of peritoneal infection, and I can scarcely imagine anyone willing to subject any part of the peritoneal cavity to a fæcal bath when early operation would prevent it, however opposed to surgery he might be.

The next group is those cases where a frank abscess was present. Of all cases treated conservatively, a considerable proportion will develop collections of pus. It is a common belief, I think, that this is a safe conclusion to an appendicular attack. My experience does not support this view.

Of twenty-one cases, six died, that is, 28.2 per cent. The minimal surgical procedure—simple drainage—was carried out in these. Admittedly some of them were bad subjects on account of age or preceding illness, and the additional burden of combating appendicitis was too great a strain on myocardium and general resistance. Surgery cannot remedy the systemic effects of sepsis which have already occurred; it cannot always prevent burrowings of pus into various remote areas of the peritoneum or even pleura. Appendicular abscess always carries grave risks.

Of the deaths, two were in women of 50 and 70 respectively, who developed appendicitis during convalescence from pneumonia. They had large abscesses, which were drained, but death occurred twelve and thirteen days later from toxæmia and cardiac failure. One, an imbecile child of 15, five days ill, died within twenty-four hours of drainage, from profound toxæmia.

A man of 25 died from gangrene of a large portion of ileum, due to mesenteric

thrombosis. The abscess lay behind his mesentery; he had been fourteen days ill. A rapid resection was performed, but paralytic ileus followed. A man of 28, fourteen days ill, died in thirteen days from paralytic ileus. Finally, a youth of 19, and almost moribund, died on the day of admission after a small incision to evacuate pus, under local anæsthesia.

Only three were discharged from hospital in fourteen days, that is, fourteen per cent.

I may have been unfortunate in encountering so many cases of abscess extremely ill, but I am more convinced than ever that no case should run its course to this development, by choice.

My last group is peritonitis. I have reserved for this only the gravest cases, where the process was spread throughout the whole peritoneum, since many of the perforated cases had, as already indicated, spreading peritonitis. Out of twelve such cases, nine died; five of these were fulminant cases less than twenty-four hours ill. Diagnosis was only established at operation or post-mortem in four, as the abdominal picture was that of peritonitis of uncertain etiology. In three the appendix had perforated, in one it was completely gangrenous, and in one full of pus but intact. Two died within twenty-four hours, two survived four and five days respectively, and one, a girl of 15, in whom only a suprapubic drain was inserted, on account of extreme illness, survived fifteen days. Post-mortem revealed a perforated appendix and general peritonitis. Of the remaining four, one was thirty-six hours ill, and made a good recovery, but when convalescent developed pneumonia, and died thirty-six days after operation.

The others were three, seven, and eleven days ill before admission, and extremely ill at the time of operation. A suprapubic drain was inserted in one, who died in a few hours; post-mortem revealed a perforated appendix. In both the others the abdomen was full of pus; they died in thirteen and twenty-six days; perforated appendices were present in each.

Thus out of 162 cases with gross peritoneal sepsis, i.e.,. gangrenous or worse, 14.1 per cent. died, sixty-one per cent. were more than fourteen days in hospital, as contrasted with seventeen per cent. of the clean group. It is interesting to note that only twenty-five per cent. of this group had had previous attacks, as compared with forty-seven per cent. of the clean cases, suggesting that some degree of protection is conferred by attacks of the milder variety.

Of the twenty-five cases that died, twenty-three had gross peritoneal infection, and eighteen were three or more days ill; the exceptions being the fulminant cases and two already described. The average age was 31 years; sixteen were males and nine females.

I must conclude that delay is undoubtedly the most important factor in the death-rate for acute appendicular disease, and in the gravity of the illness. Surgery probably is ill-advised in some of these delayed cases, but that does not in any way alter this statement. The profession, and the public for the most part, recognise that appendicitis demands immediate operation, yet 103 out of 390, over twenty-six per cent., were three or more days ill, and eighty-four others were not admitted until the second day.

The two factors chiefly responsible for delay seem to be—(*a*) home treatment, and (*b*) difficulties in diagnosis.

As to the first of these, it is the usual practice with the lay public when attacked by abdominal pain to apportion blame to a fancied dietetic indiscretion or a chill. The remedies they employ are aperients and poultices. In many cases even appendicular attacks recover with or despite these measures, but sometimes symptoms persist, and it is only at the end of two or three days that medical advice is sought.

I think that the profession has a part to play even in this matter. The public must be taught, not how to diagnose appendicitis, but simply how to act in the presence of abdominal pain, so that they do not injure themselves. It is neither practical nor desirable that a doctor should be sent for every time a "bellyache" occurs, but if it were impressed upon mothers that neither aperients nor anything else should be given by mouth in such cases until the patient is better, or on medical advice, and that an enema is safer than purgatives, a step forward would have been taken. Very severe pain or symptoms lasting more than six hours demand medical advice. This conditioning, if I may use the word, of children, will bear fruit in later life. After all, appendicitis and other grave abdominal lesions begin as colic, or pains, in no way different from those of minor gastro-intestinal disturbances.

Difficulty in diagnosis can be the only other explanation. I think the surgeon is liable to underestimate these difficulties, since more often he sees the finished product, the fully developed case.

The general practitioner sees the early stages, and apart from history may have little or nothing to guide him. History is of the greatest importance—briefly, pain, usually of sudden onset, colicky in type, epigastric, umbilical, generalised or right-sided, succeeded generally by nausea, or vomiting, and tending to settle in the right side, is only too familiar. But there are variations. Several doctors have told me that they regarded pain beginning in the right side as definitely against the diagnosis of appendicitis, yet 109 of my cases give this as the point of origin. I think this figure is rather high, as probably they concentrate on the pain present at the time of examination, and forget that it started elsewhere, but I have gone carefully into this point since, and a number have been very definite about it. I think that this fallacy may have arisen from emphasis laid on the fact that *chronic* right-sided pain is seldom appendicular in origin.

Nausea and vomiting are important but not inevitable occurrences; in my series vomiting was present 248 times, and nausea alone fifty-five times. In all except eight cases they succeeded pain. These eight exceptions where vomiting occurred before pain were all bad obstructive cases, and two died. Black vomit was present twice, and both cases were fatal.

An absence of increased temperature and pulse-rate is another common source of difficulty—neither may be raised at all even in gangrenous, or rapidly perforating, cases, probably because of the mechanical nature of the lesion and rapid progress to gangrene before systemic absorption of toxins has occurred. The doctrine that a falling temperature and a rising pulse-rate are suggestive of gangrene is true, but gangrene can and does occur in the absence of either increased temperature or

pulse-rate. Actually fifteen of the gangrenous cases (sixty-four) were afebrile at the time of operation, and in fifteen the pulse was below 84. Four had neither increase of temperature nor pulse-rate.

In the perforated group (sixty-five), nine were afebrile, and in seven the pulse was below 84. In four there was no rise of either temperature or pulse-rate.

Even in the abscess group (twenty-one), six were afebrile, although all but one had an increased pulse-rate.

In the whole series only twelve cases had a temperature above 102°F., and of these, three had foreign bodies in the appendix.

In my experience, tenderness is always present sooner or later. Careful examination may be required to elicit it, as it may only be found on rectal examination if the appendix is pelvic in position, and sometimes in regions other than the usual. I might add that over-enthusiastic palpation can elict tenderness of its own making.

Once resistance or rigidity are present, the probability of peritoneal irritation is so strong that surgical interference is indicated.

I do not wish to complicate the problem by referring to other clinical evidence, as I have rarely found it of much practical value. The majority conform to an easily recognised picture, and the treatment is operation, but the fact remains that many cases in their early stages are not sufficiently definite for diagnosis. In these I think that the proper attitude to adopt is masterly inactivity, that is, bed, no aperients, no food nor drink, no morphia; enemata (not always without risk, however) may be given. If after twelve to eighteen hours of onset, symptoms have not subsided, or if local tenderness or other signs be present, further delay is not justifiable. Should symptoms and signs have subsided, all will probably be well, although further observation is necessary.

I have no desire to preach an alarmist doctrine, but all things have a simple beginning. It is only when our attitude to abdominal pain of an acute type becomes more questioning, when we consider the possibility in every case of its being the herald of some catastrophe demanding surgical interference, that we shall see no longer the late appendix, intestinal obstruction, and other neglected abdominal emergencies. At the root of the matter is our inherent desire to do something to relieve the patient at once; in a word, to treat and diagnose before diagnosis can be made in actual fact. The public endows the doctor with miraculous powers in time of trouble, expects an explanation of illness on the spot and treatment accordingly. It takes courage to admit ignorance, to withhold relief; still more to alter an expressed opinion.

Sometimes, too, economic circumstances, business reasons, and a natural dread of operation, are used as pleas to induce delay in the hope that the attack will pass. I can recall several cases in which I was persuaded to delay operation for reasons that seemed all-important to the patient, with almost disastrous results—three were doctors or their relatives.

Prophecy has no place in the treatment of appendicitis; it is perhaps a good gamble that any given case will recover without operation, but it remains, and always will remain, a gamble. Delay alone can decide the result, but in the wake of this follows disaster and death.